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EXAMINER

CHOW, LIXI

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/806,106

Applicant(s)

AHN ET AL.

Examiner

Lixi Chow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 8-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8-11, 15, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 12-14, 16-22 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-3 and 8-26 are pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, claim 23 recites, “wherein the power of the leading pulse of the erase pattern is equal to the power of the period of the multi-pulses of the recording pattern” (emphasis added). However, claim 23 depends from claim 22, and claim 22 recites, “the power of the period...is greater than the power of the leading pulse of the erase pattern” (emphasis added). Therefore, it is not clear as to whether the power of the period is greater than or equal to the power of the leading pulse of the erase pattern.

Furthermore, claim 24 recites, “wherein the power of the trailing pulse of the multi-pulse of the erase pattern is greater than the period” (emphasis added). However, this seems to contradict with the subject matter claimed in claim 1. For example, claim 1 recites, “a power of a period...to be the high power of the multi-pulse” (emphasis added). Since any pulse within the erase pattern is either the low power of the multi-pulse or the high power of the multi-pulse, it does not make sense to say that power of the trailing pulse of the multi-pulse of the erase pattern is greater than the period. In other words, the trailing pulse of the multi-pulse of the erase pattern

can only be less than or equal to the power of the period, because the period has the high power of the multi-pulse of the erase pattern. Accordingly, the subject matter in claim 24 is indefinite.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 8-11 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Ichihara (US 6,396,792).

Regarding claim 1:

Ichihara discloses a method of recording data on an optical recording medium, the method comprising:

generating channel modulated digital data (see Fig. 1A);

generating a recording waveform having an erase pattern containing a multi-pulse of pulses having corresponding low and high powers (see Fig. 1B), and a recording pattern in response to the channel modulated digital data (see Figs. 1A, 1B and 1D); and

forming a first level of the channel modulated digital data as a mark and forming a second level of the channel modulated digital data as a space by using the generated recording waveform (see Fig. 1D),

wherein the generating of the recording waveform comprises causing a power of a period between an end point of the erase pattern and a start point of the recording pattern to be the high

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power of the multi-pulse (see col. 6, line 62 to col. 7, line 1; the example provided by Ichihara, i.e., the level may be changed from Pc1 to Pa, suggests that the power of a period between an end point of the erase pattern and a start point of the leading pulse of a recording pattern is at high power of the multi-pulse) and a power of a leading pulse of the erase pattern to be the low power or the high power of the multi-pulse (see Fig. 1B, the leading pulse of the erase pattern is at high power of the multi-pulse).

Regarding claim 2:

Ichihara discloses the method of claim 1, wherein the generating of the channel modulated digital data comprises:

performing a Run Length Limited (RLL)(2, 10) method (Col. 5, lines 40-41 mention the shortest mark being 3tw and the longest mark being 11tw; this suggest RLL (2, 10) method was performed).

Regarding claim 8:

Ichihara discloses the method of claim 1, wherein the generating of the recording waveform comprises:

causing a ratio of a duration time of a high level and another duration time of a low level of the multi-pulse to be substantially 1:1 (see Fig. 1B, pulse width of each level (Pc1, and Pc2) is 0.5 tw).

Regarding claim 9:

Ichihara discloses the method of claim 8, wherein the generating of the recording waveform comprises:

causing the duration time of the high level to be half a clock cycle (see Col. 6, lines 62-64).

Regarding claim 10:

Ichihara discloses the method of claim 8, wherein the generating of the recording waveform comprises:

causing the ratio of the duration time of the high level and the duration time of the low level of the multi-pulse to be $m:n$ where m and n are integers (see Fig. 1B and Col. 6, lines 23-34; Ichihara provides an example for $Pc1$ and $Pc2$ to be equal in time width, hence, m equal n).

Regarding claim 11:

Ichihara discloses the method of claim 1, wherein the generating of the channel modulated digital signal comprises:

forming a first of an NRZI data signal as the mark and a second level of the NRZI data signal as the space (see Fig. 1A and Fig. 1D).

Regarding claim 15:

Ichihara discloses the method of claim 1, wherein the generating of the recording waveform comprises:

forming the recording pattern having at least two power levels (see Fig. 1B; power levels $Pc2$ and Pa are the two power levels for the recording pattern).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara. See the description of Ichihara in paragraph 5.

In regards to claim 3, Ichihara discloses all the limitations that are set forth in claim 1 for the reason above in the 102 rejection.

Although Ichihara only perform RLL (2, 10) method for recording data on an optical medium; nevertheless, it would have been obvious to recording data using a conventional RLL (1, 7) method to record data onto a recording medium of Ichihara. Examiner has taken Official Notice that performing a RLL (1, 7) method for recording data on an optical medium is a conventional method used in recording data onto a recording medium (see Tanaka et al., 2002/0001275, for example). One of ordinary skill would have been motivated to do this, since RLL (1, 7) recording method is art recognized equivalence method, and the substitution of a run-length-limited (2, 10) for a run-length-limited (1, 7) is considered an obvious substitution of recording, given the teaching of Ichihara as a whole with the ordinary skill of one in the recording filed art.

Allowable Subject Matter

8. Claim 26 is allowed.

In regards to claim 26, none of the reference of record alone or in combination disclose or suggest a method of recording data on an optical recording medium, the method comprising:

generating channel modulated digital data;

generating a recording waveform having an erase pattern containing a multi-pulse of pulses having corresponding low and high powers, and a recording pattern in response to the channel modulated digital data; and

forming a first level of the channel modulated digital data as a mark and forming a second level of the channel modulated digital data as a space by using the generated recording waveform,

wherein the generating of the recording waveform comprising:

causing a power of a leading pulse of the erase pattern to be the low power of the multi-pulse and a power between an end of the erase pattern and a start point of a leading pulse of the recording pattern to be the low of the multi-pulse, and

generating a cooling pulse concatenating the recording and erase patterns, **the cooling pulse having a cooling power below the low power.**

9. Claims 12-14, 16-22 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regards to claim 12, none of the reference of record alone or in combination disclose or suggest **forming a cooling pulse as a part of the erase pattern, the cooling pulse having a cooling power below the low power of the multi-pulse.**

In regards to claim 16, none of the reference of the record alone or in combination disclose or suggest the generating the recording waveform further comprising a cooling pulse concatenating the recording and erase patterns, in response to the channel modulated digital data, **the cooling pulse having a power below the low power.**

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In regards to claim 22, none of the reference of record alone or in combination disclose or suggest the generating of the recording waveform further comprises forming the recording pattern using a recording multi-pulse, and **the power of the period between the multi-pulse and the recording multi-pulse is greater than the power of leading pulse of the erase pattern.**

Response to Arguments

10. Applicant's arguments with respect to claims 1-3, 8-11 and 15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lixi Chow whose telephone number is 571-272-7571. The examiner can normally be reached on Mon-Fri, 8:30am to 6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LC 2/27/07



WAYNE YOUNG
SUPERVISORY/PATENT EXAMINER